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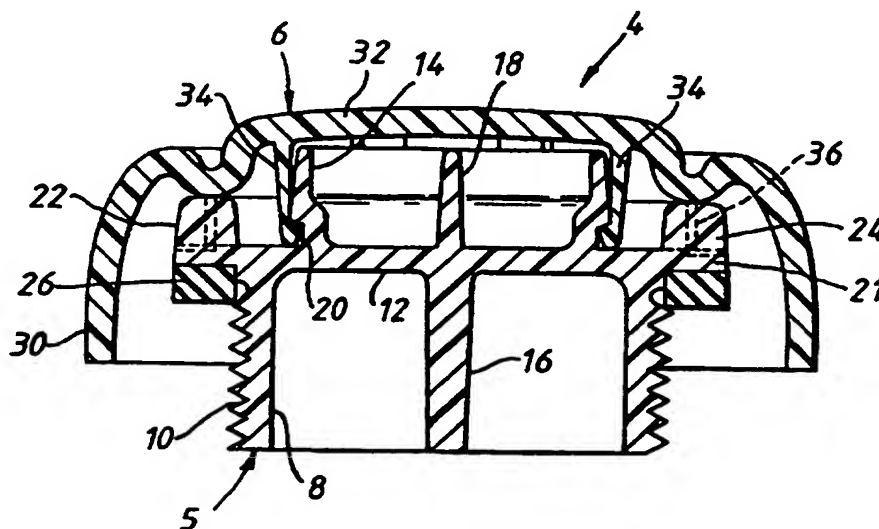
(52) UK CL (Edition O)
B8T TCM

(56) Documents Cited
US 4809869 A **US 4790449 A**

(58) Field of Search
UK CL (Edition O) **B8T TAM TCM TCP TMA TWN**
INT CL⁶ **B65D 41/00 41/58 41/62 51/00 51/18 51/24**
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(54) Closure member with cover

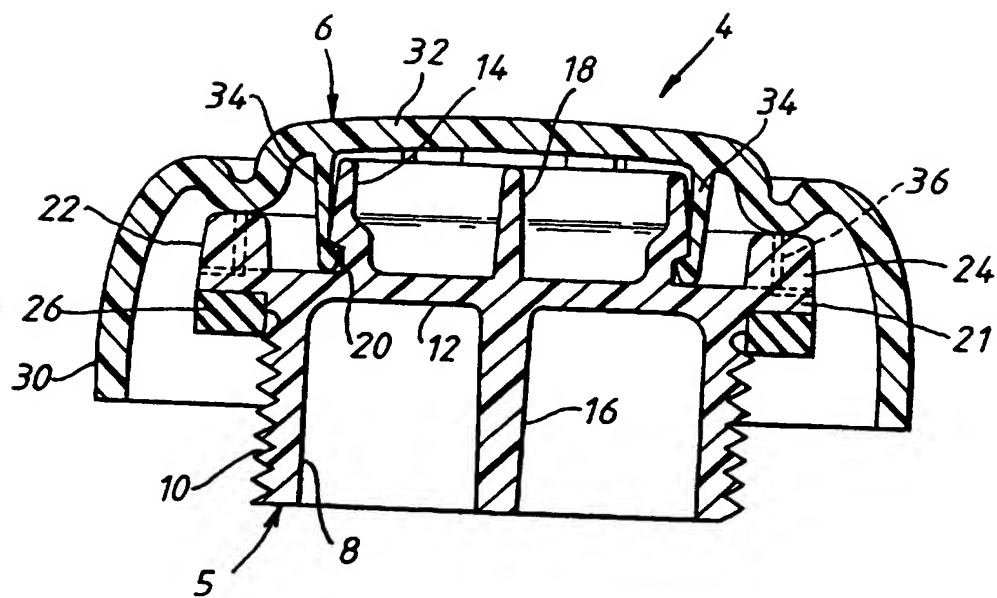
(57) An oil filler cap is in two parts, a main body (5) and a cover (6). The main body (5) is adapted, such as by means of a screw thread (10), to be secured in the oil filler opening or pipe so as to close it off with the aid of a seal (26). The main body (5) is made of fibre-reinforced polyamide or other suitable material adapted to withstand the effects of high temperature and the oil. The cap (6) is secured to the main body (5) and is made of polypropylene material or other suitable material which has a more pleasing appearance than the material of the main body part (5) and substantially retains this appearance during its life. Preferably, the cap (6) is brightly coloured.



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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

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CLOSURE MEMBERS

The invention relates to closure members. One example of a closure member embodying the invention, and to be described in more detail below by way of example only, is a closure cap for the oil filler opening of a vehicle engine. However, the invention may be applied to other closure members.

According to the invention, there is provided a removable closure member for an opening subjected to adverse environmental effects, comprising a main body adapted for removable fitting to the opening to close it and made of a first material capable of withstanding the environmental effects, and a cover secured to and over the main body and made of a second material which is less able to withstand the said environmental effects and which presents a pleasing appearance, the cover substantially obscuring the main body from view when the closure member is fitted to the opening.

According to the invention, there is further provided a removable oil filler cap for the oil filler opening of a motor vehicle engine, comprising a main body made of polyamide material and

adapted to be removably secured to the opening to close it off, and a cover made of polypropylene which is separate from but secured to the outside of the main body and substantially hiding the main body from external view when the cap is in position on the opening.

A closure cap embodying the invention, and for removably closing the oil filler opening of a motor vehicle engine, will now be described, by way of example only, with reference to the accompanying diagrammatic drawing which is a cross-section through one of the closure caps.

The closure cap 4 of the Figure is of moulded form, using material to be described in more detail below. It comprises a body 5 and a cover 6.

The body 5 comprises a hollow cylindrical part 8 which is externally screw-threaded at 10 and closed off by a top 12. The top 12 carries an outer cylindrical flange 14. A web 16 extends across the hollow cylindrical interior of the part 8, and a further web 18 extends across the space defined by the circular flange 14. The exterior face of the flange 14 defines an annular notch 20. The top 12 is extended radially outwards to provide

a rim surface 21 extending around the body 5 which supports integral pegs 22,24 positioned diametrically opposite each other as shown in the Figure.

The body 5 is produced by a moulding operation from a suitable rigid material such as fibre-reinforced polyamide. After the moulding operation, a soft seal 26 is secured in position on the underside of the rim 21; this may be produced by an over-moulding operation.

The cover 6 is of inverted shallow cup shape comprising a skirt 30 and an integral top 32. The top 32 is provided with integral downwardly depending pegs 34 at 60 degree intervals around the underside of the cap. The pegs 34 in use resiliently engage the outside surface of the circular flange 14 and have shaped distal ends for engaging the notch 20.

A circular rim 36 (shown dotted in the Figure) extends around the underside of the cap and is slotted to receive the pegs 22,24.

The cover 6 is moulded from material such as polypropylene and is preferably brightly coloured. It is moulded separately from the main part 5 and clippingly attached to it by means of the

pegs 34 which engage the notch 20 on the outside of the circular flange 14 on the body 5. The pegs 22,24 engaging in the slots in the circular rim 36 connect the cover 6 and the body 5 rotatably together.

The skirt 30 has a regularly varying shape around the periphery of the cover 6 to provide a hand grip for the cap.

In use, the user grasps the cap 5 by means of the cover 6 and mounts it in position in the oil filler opening or in the open end of the oil filler pipe on the vehicle engine by inserting the cylindrical part 8 of the body 5 into the opening or into the end of the pipe so that the screw thread 10 engages a complimentary thread in the opening or in the pipe end. The user then turns the cap by means of the skirt 30 until the seal 26 makes an oil-tight seal around the opening of the pipe end. Removal of the cap is carried out by a reverse process.

Because the cap 4 is made in two separate parts 5,6, each part 5,6 can be constructed and adapted for its particular purpose. Thus, the material of the body 5 (fibre-reinforced polyamide in the example mentioned above) is required to withstand high temperatures and to be resistant to damage or ageing or other ill

effect from the oil. The high temperature primarily results from the fact that the body 5 is closing off an opening connected to the interior of the engine. However, although fibre-reinforced polyamide (and similar material) has been found to be very suitable for carrying out these functions, it does not have a very attractive appearance. In particular, it can only be coloured with difficulty; any coloration tends to deteriorate and be adversely affected by the effect of the heat and the oil. However, the cover 6, being made of polypropylene material in the present example, can be easily given an attractive appearance and a bright colour. In use, the cover 6 effectively hides the body 5 from external view when the cap is in the closed position. Although polypropylene is less resistant to elevated temperature, this is not a significant disadvantage because it is shielded from the highest temperatures by the body 5.

In this way, therefore, an oil filler cap may be produced having a brightly coloured appearance (so that it can be easily located during access to the engine compartment) and which maintains this colour and appearance during extended use - but the part of the cap which is primarily exposed to high temperature and to the oil is made of material best suited to resist their effects.

various modifications may be made to the cap 4.

For example, it is not necessary that the body 5 and the cover 6 be made respectively of the two materials mentioned above (fibre-reinforced polyamide and polypropylene). Instead, they may be made of any other suitable materials, provided that the material of the body 5 is capable of resisting elevated temperatures and contamination by oil and that the material of the cover 6 can be given a pleasing appearance, and preferably a bright colour, and will maintain this appearance and colour over an extended period and not be adversely affected by the environment in which it is used.

In other applications, the cap may not necessarily be used for an oil filler opening. It might, for example, be used for the filler opening on a motor vehicle for receiving some other fluid such as coolant, hydraulic fluid or fuel. In this case, the material of the main body 5 would be selected to be able to withstand the effect of such fluid (as well as the relevant temperature and/or other adverse environmental effect).

The screw thread 10 on the body 5 may be replaced by any other suitable means of securing the cap in position on the filler

opening or pipe and enabling it to be removed easily; for example, a suitable peg and slot arrangement may be used instead. The two parts 5 and 6 may be secured together in any suitable way and not necessarily by the interlocking pegs 34 and notch 20. In particular, the two parts may be secured together by a ratchet or similar mechanism which secures the two parts together during normal operation but allows the cover 6 to rotate relative to the body 5 when the torque applied to the cover 6 exceeds a predetermined maximum value. This prevents over-tightening of the cap. Instead, the cover may be secured in position by a screw-thread arrangement, by adhesive or welding or any other suitable means.

1. A removable closure member for an opening subjected to adverse environmental effects, comprising a main body adapted for removable fitting to the opening to close it and made of a first material capable of withstanding the environmental effects, and a cover secured to and over the main body and made of a second material which is less able to withstand the said environmental effects and which presents a pleasing appearance, the cover substantially obscuring the main body from view when the closure member is fitted to the opening.

2. A closure member according to claim 1, in which the first material is polyamide.

3. A closure member according to claim 2, in which the polyamide is fibre-reinforced.

4. A closure member according to any preceding claim, in which the second material is polypropylene.

5. A closure member according to any preceding claim, in which

the main body comprises a cylindrical part having at least one closed end, the cylindrical part being adapted to engage the opening for closing it, and the outside of the closed end being adapted to receive the cover.

7. A closure member according to claim 6, comprising sealing means extending around the outside of the cylindrical part for providing a seal for the opening.

8. A closure member according to claim 7, in which the sealing means comprises a flange extending around the outside of the cylindrical part and carrying a soft sealing member.

9. A closure member according to preceding claim, in which the cover comprises a central part adapted to be secured to the outside of the main body and an integral skirt depending from the central part.

10. A closure member according to claim 9, in which the central part comprises a plurality of depending pegs having shaped distal ends for lockingly engaging in notch means carried by the main body.

11. A closure member according to claim 9 or 10, including peg means projecting from one of the main body and the cover towards the other thereof and mounted at a predetermined angular position, or at a respective one of a plurality of predetermined angular positions, and means on the other of the main body and the cover defining slot means for receiving the peg means thereby to hold the main body and the cover rotatably together.

12. A removable oil filler cap for the oil filler opening of a motor vehicle engine, comprising a main body made of polyamide material and adapted to be removably secured to the opening to close it off, and a cover made of polypropylene which is separate from but secured to the outside of the main body and substantially hiding the main body from external view when the cap is in position on the opening.

13. A cap according to claim 12, in which the polyamide material is fibre-reinforced.

14. A cap according to claim 12 or 13, in which the cover is brightly coloured.

15. A cap according to any one of claims 12 to 14, in which the

main body comprises a top from which integrally depends a cylinder carrying means for removably securing the main body to the opening, and in which the cover comprises a central part adapted to be secured to the outside of the top and from which central part depends a skirt portion substantially embracing the cylinder of the main body.

16. An oil filler cap, substantially as described with reference to the accompanying drawing.



Application No: GB 9604059.7
Claims searched: 1-16

Examiner: William Thomson
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Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.O): B8T (TAM, TCM, TCP, TMA, TWN)

Int CI (Ed.6): B65D 41/00, 41/58, 41/62, 51/00, 51/18, 51/24

Other: ONLINE:WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	US 4809869 (COSGROVE) See column 1, lines 12-18, column 2, line 16- column 3, line 23; Figures 2 and 3	1, 6, 7
X	US 4790449 (KYOKUICHI)	1, 2, 6-8

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.